

Evolution of Japan's Flood Early Warning Systems: Analysis of Technological Integration and Systematic Development

Mikio Ishiwatari, PhD
Professor, Meiji University



objective

- aims to identify factors driving shifts in resilience policies from social, political and institutional perspectives
- analyses policy transformation following 2000 Tokai heavy rainfall and examine repeated revisions to Flood Fighting Act
- Interview to decisionmaker, review of government documents and literature

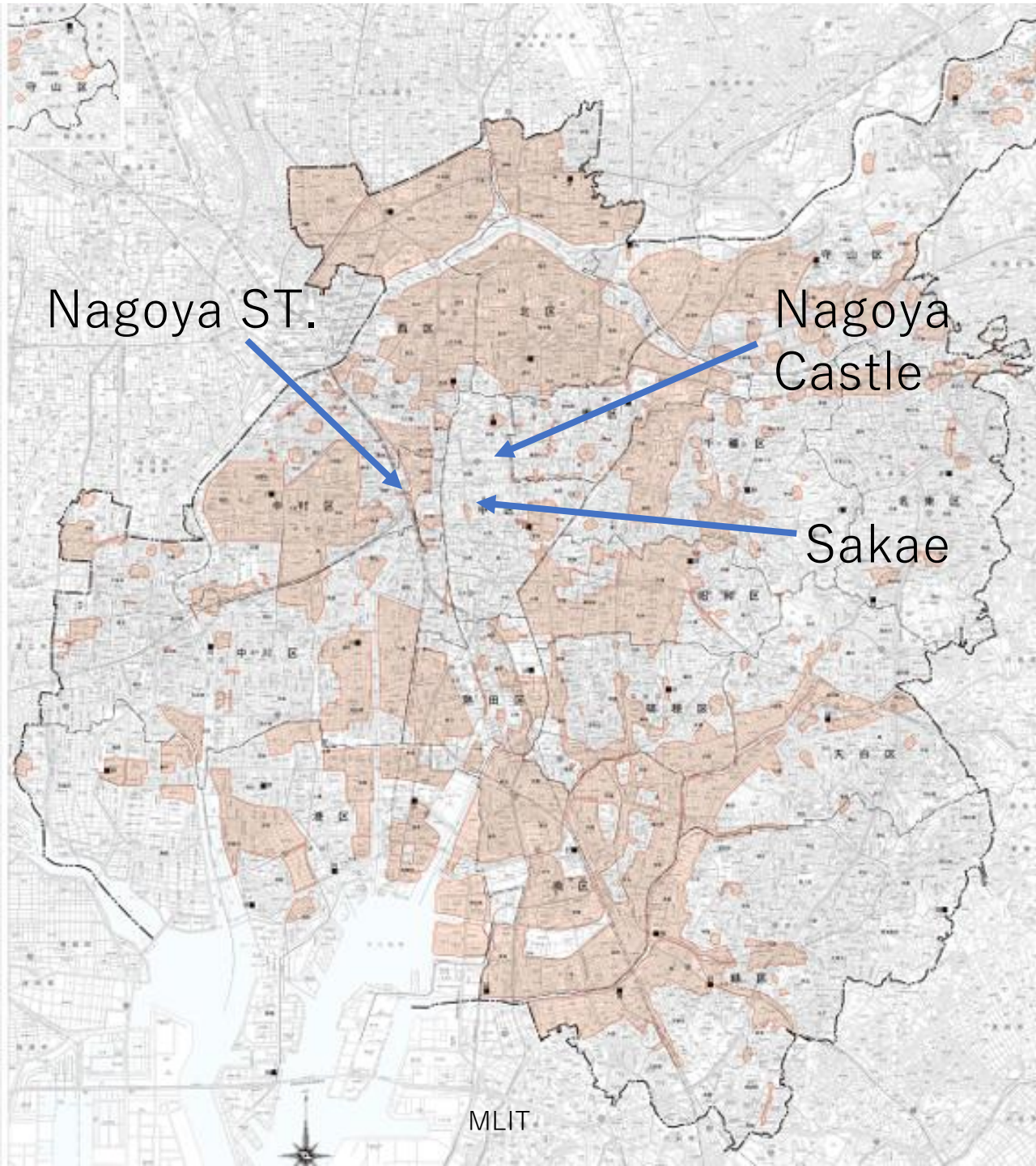
Findings 1

Tokai Torrential rainfall, 2000 Sep

Turning point in policy change

- Nagoya Metropolitan area
- Flood area: 19 km²
- Hoses damaged: 18,000





40% of Nagoya City

Evacuation order to 580,000
people at 220,000 houses

65,000 people at evacuation
shelter

Economic damage 770 billion
JPY (5 billion US)



Issues found

Low evacuation rate

Government

- Limited leading time for evacuation
- No enough information sharing

Residents

- Limited action by residents
- Low risk perception

Impact on policy change

(i) Risk area

- Taboo : MLIT could not open hazard map because of objection from politician, developer, municipality
- triggered to open disaster information

(ii) flood forecasting

- Expand to medium size rivers managed by prefecture



To revise flood fighting law enacted in 1949
sleeping law for nearly half century

	1949	1955	2001
Risk area map			Major ri
Flood forecast		Major river	Medium
Flood fighting organization			

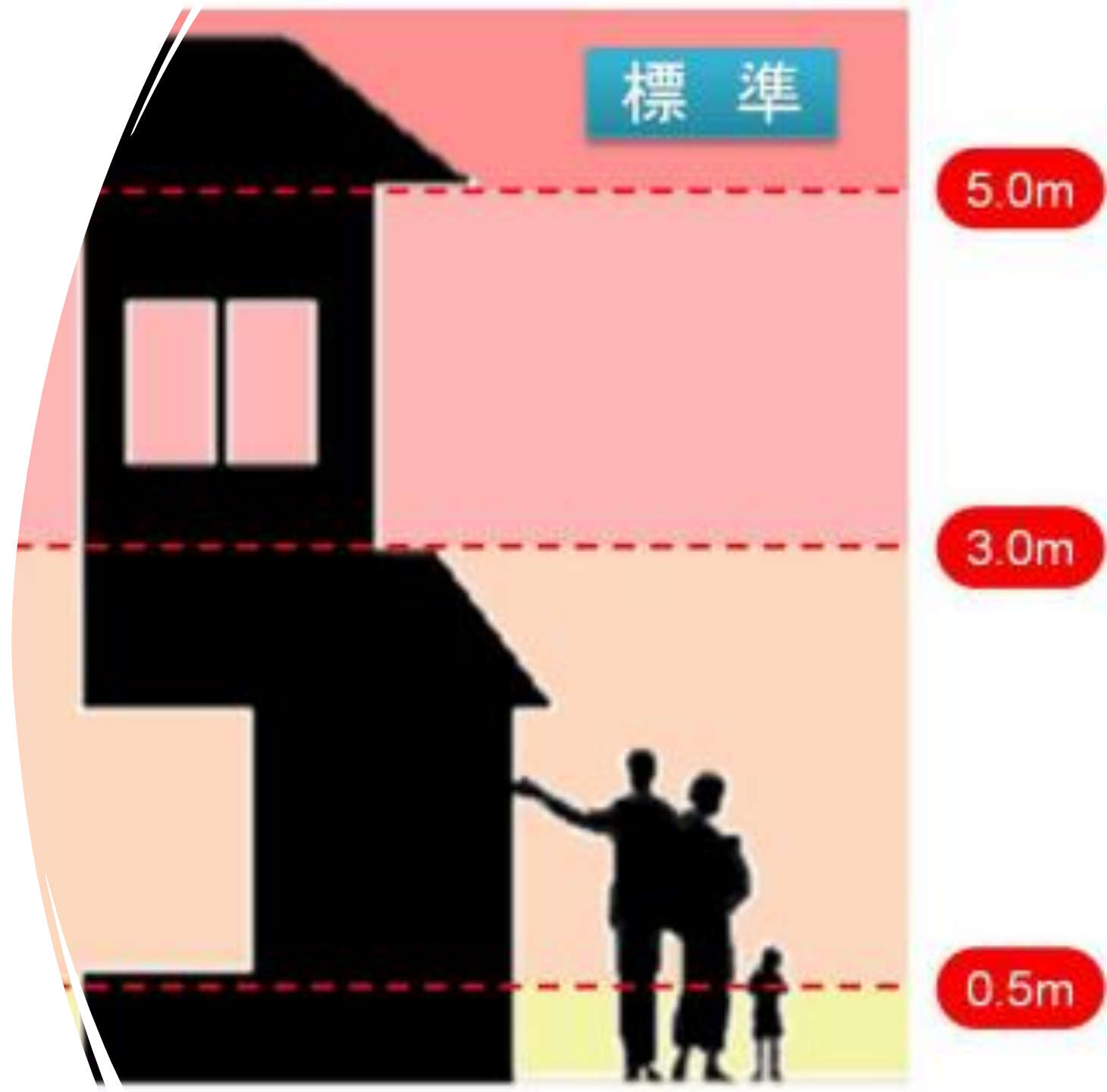


Political consensus

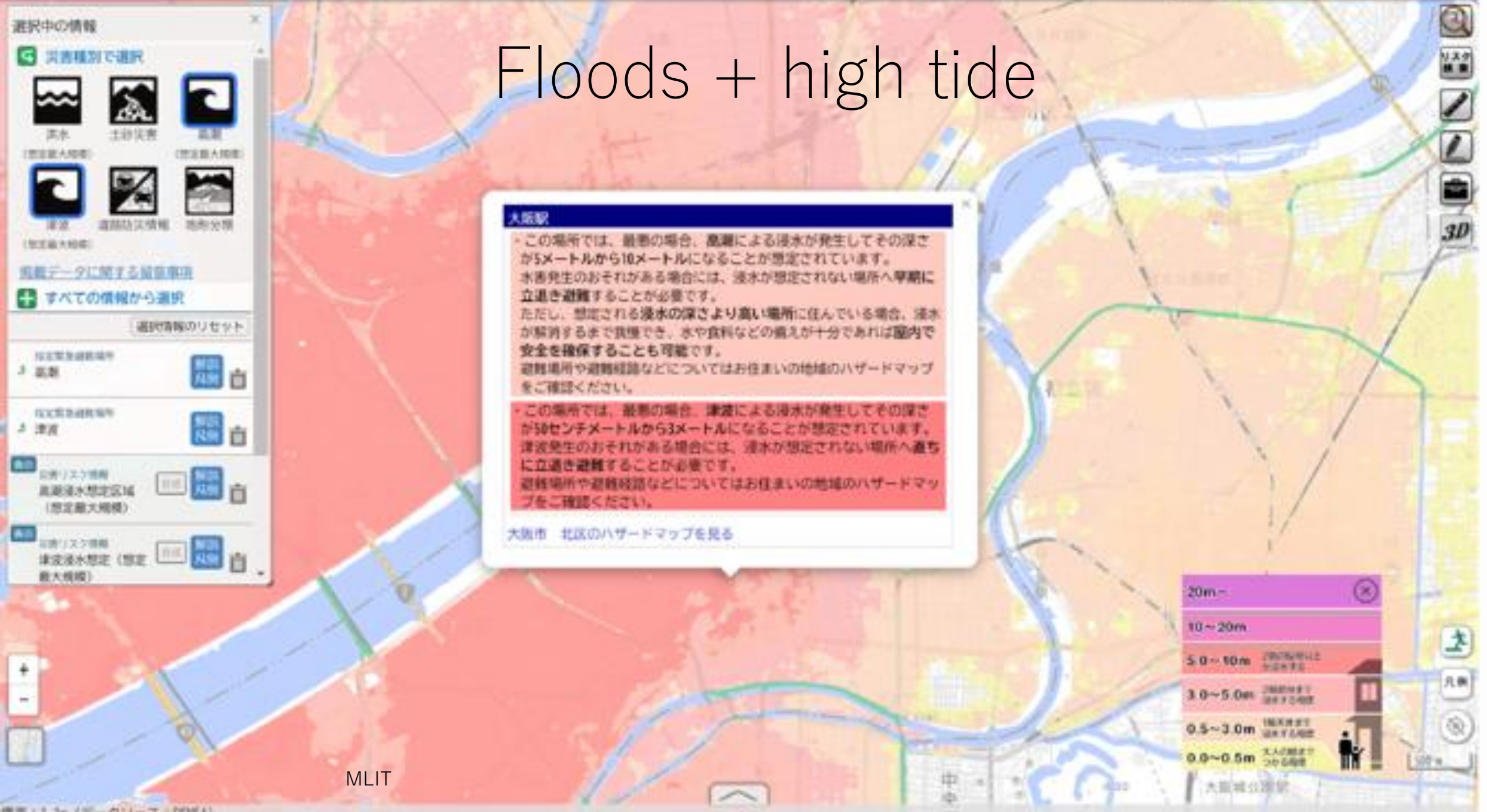
Unanimous approval for law revision
at Diet, parliament

Local government's Obligation Hazard mapping

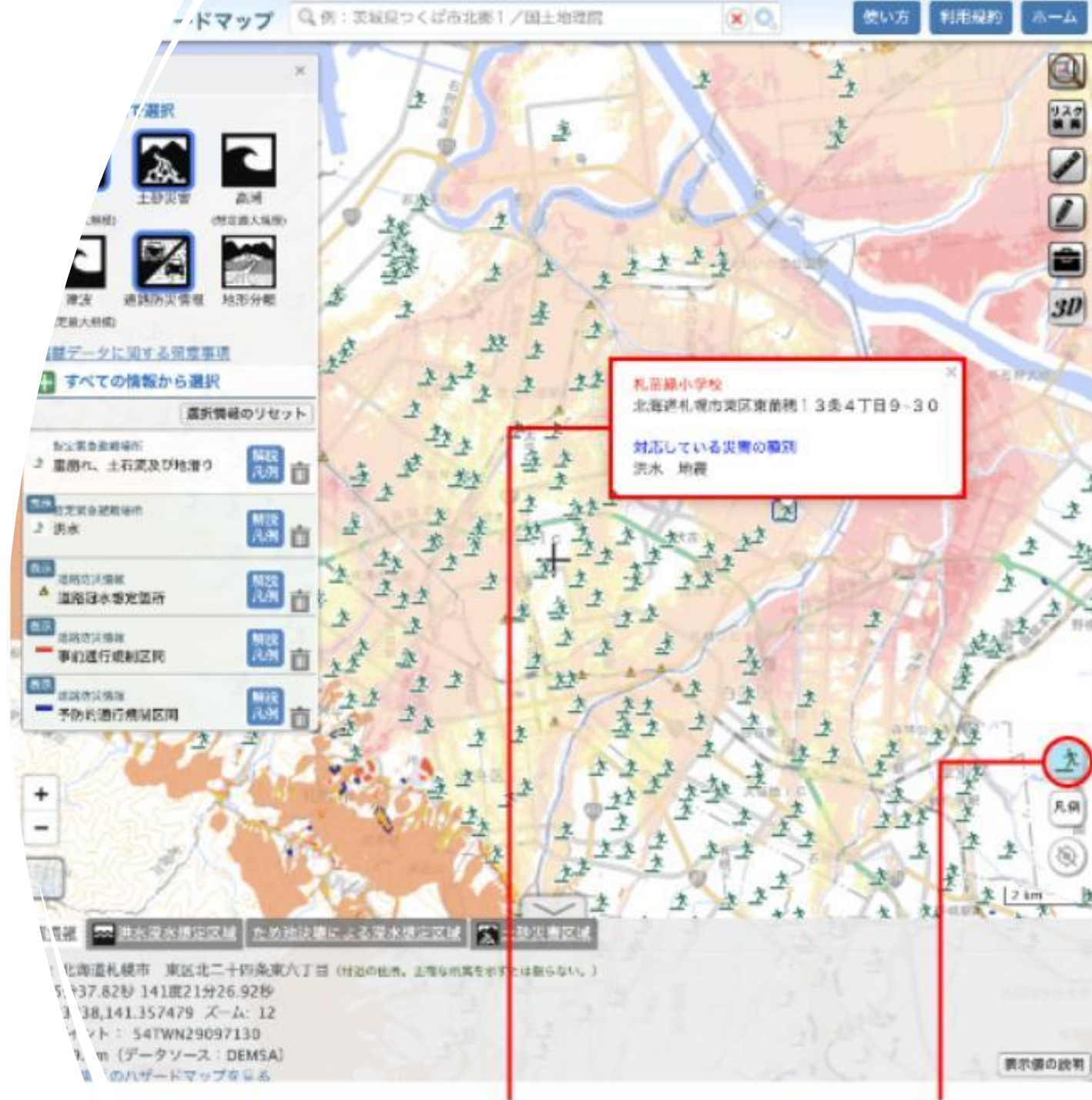
- Nat. Gov. provide simulation data
- Standardization
 - Inundation depth
 - colors



Floods + high tide



Evacuation shelters

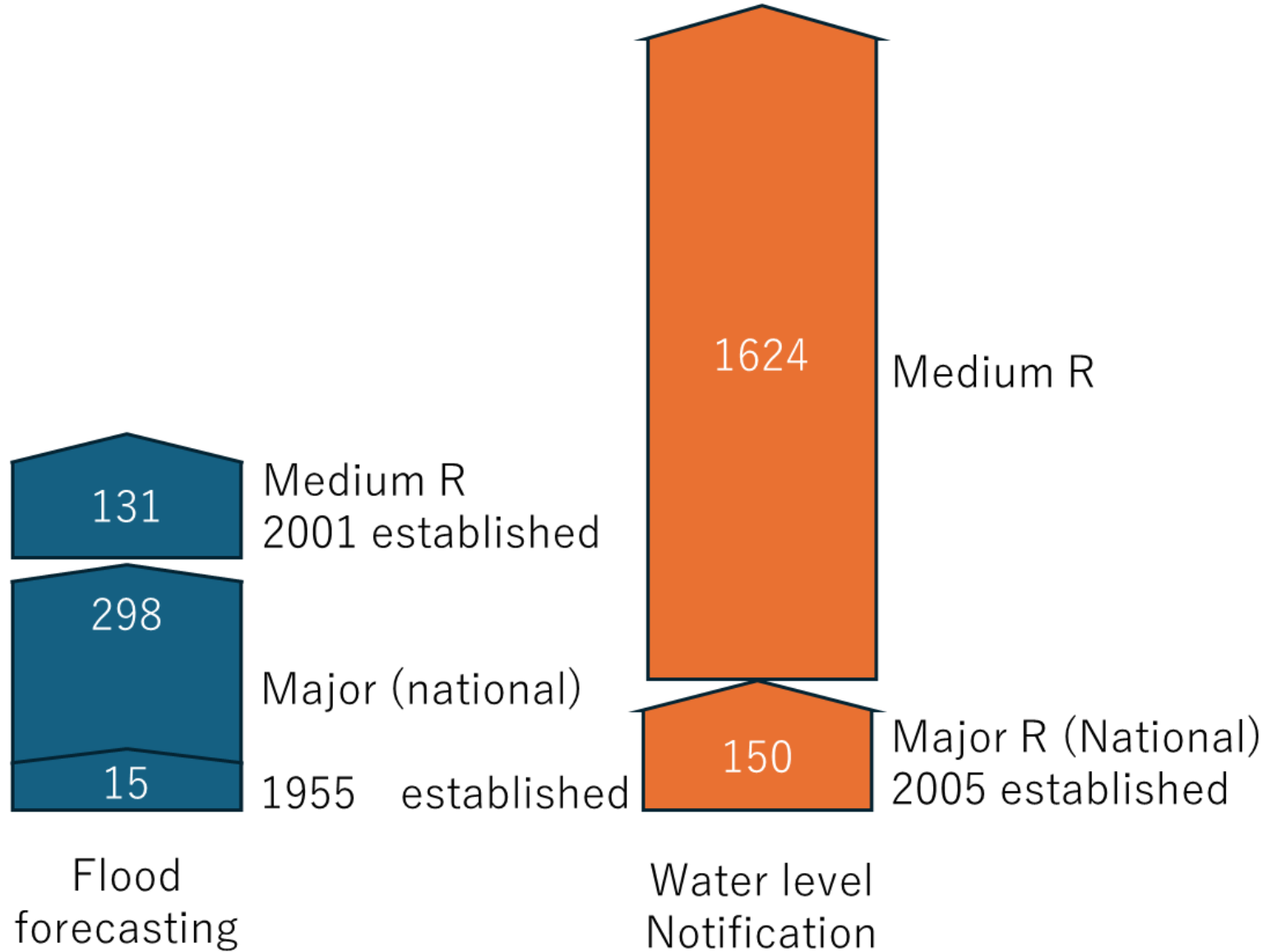


Findings 2

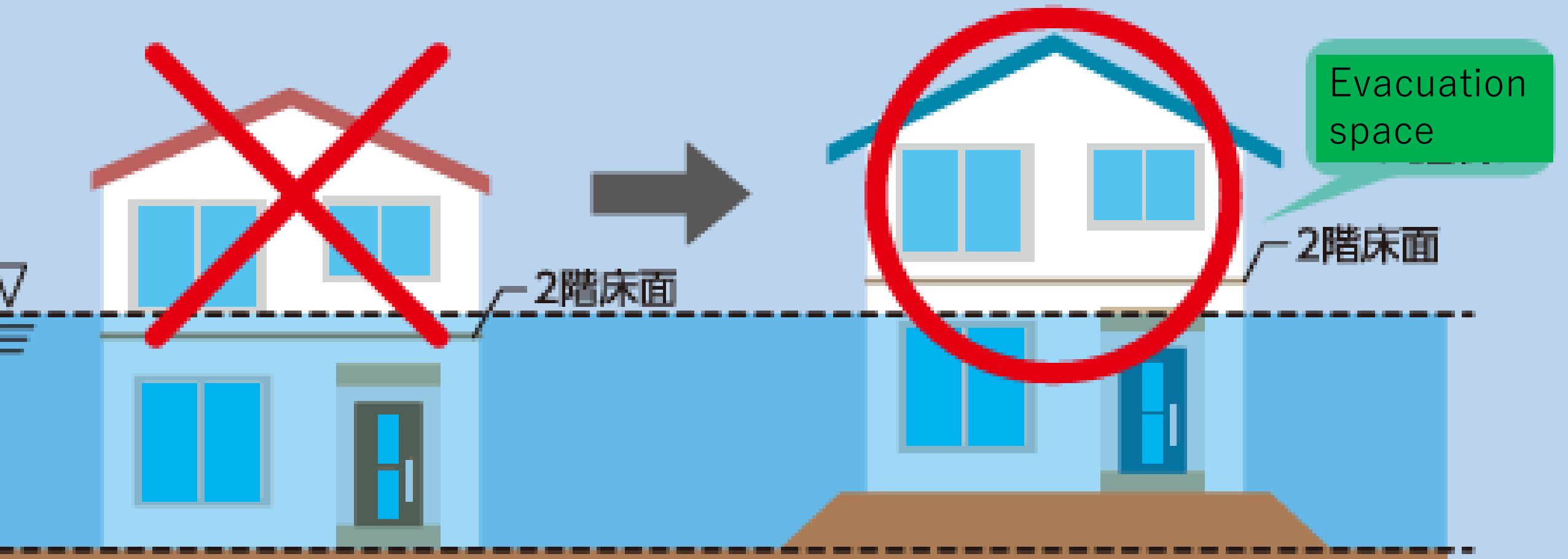
Strengthen software measures
continuous revision

	1949	1955		2001	2005	2015
Risk area map				Major river	Medium (Prefecture)	
						Maximum scale flood
Flood forecast		Major river		Medium (prefecture)	Small (water level notification)	
Flood fighting organization						

Expanding food forecast

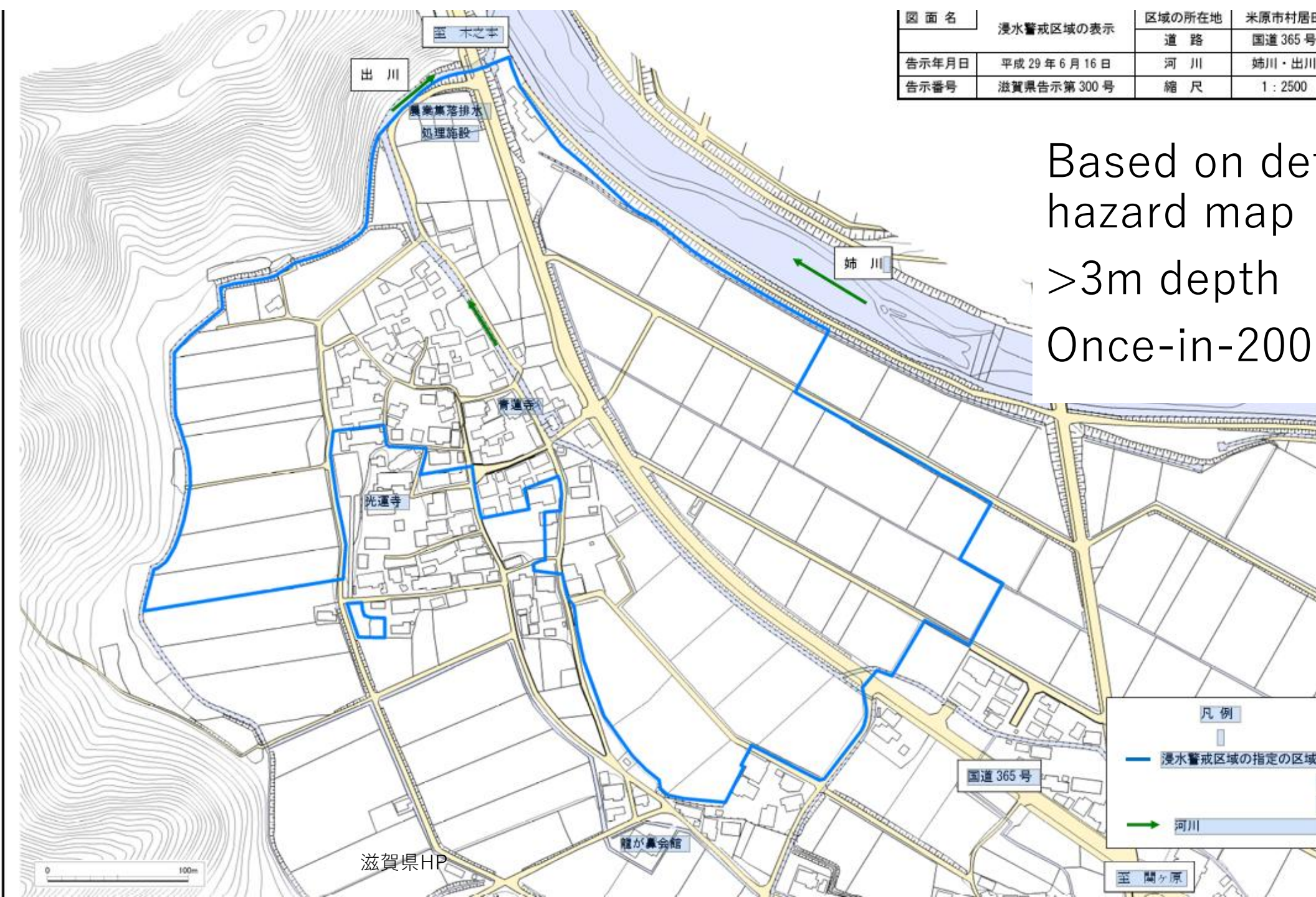


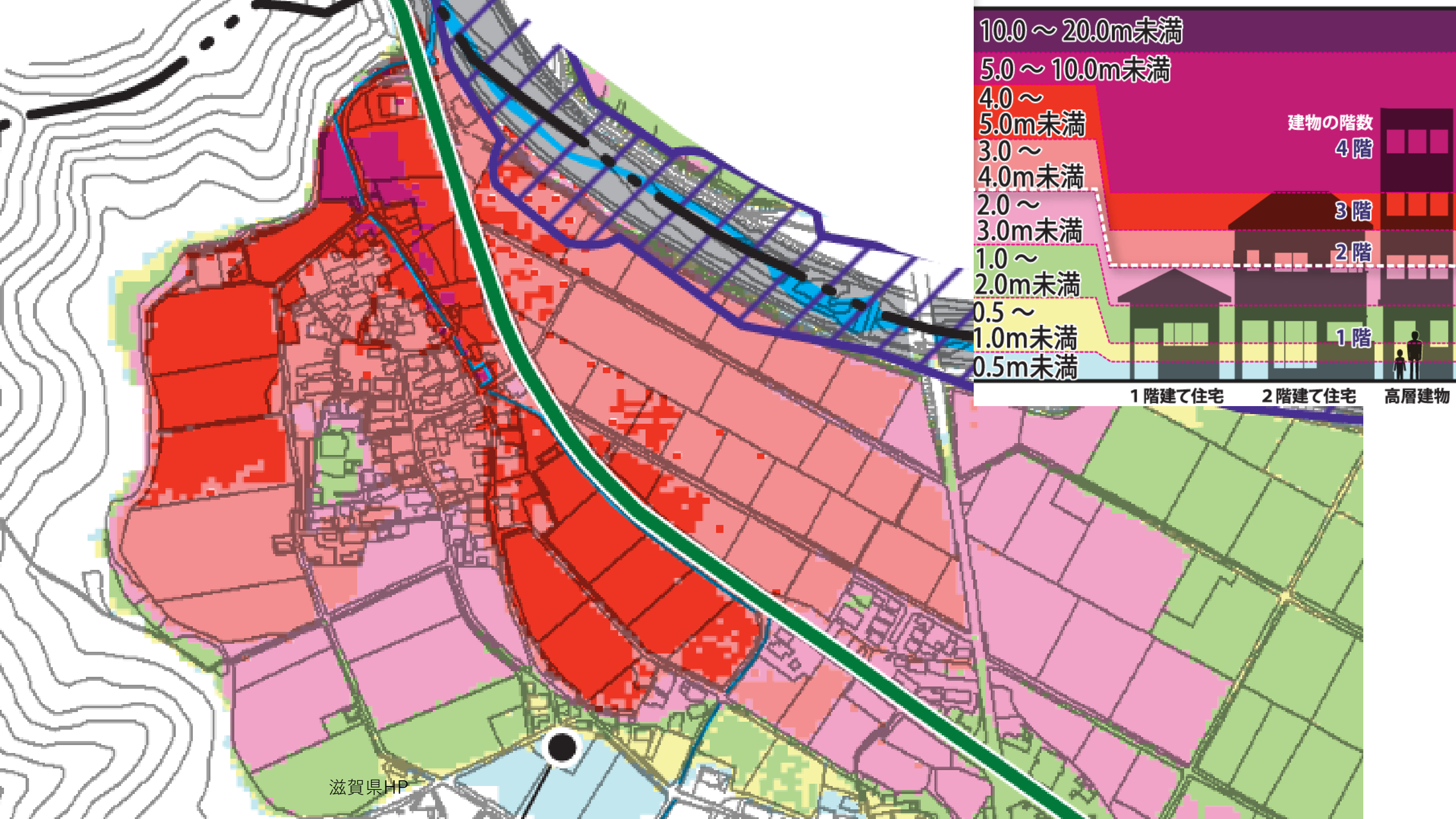
Developed to regulation: Regulation on housing in flood risk area Shiga Pref. 2012



図面名	浸水警戒区域の表示	区域の所在地	米原市村居田
		道路	国道365号
告示年月日	平成29年6月16日	河川	姉川・出川
告示番号	滋賀県告示第300号	縮尺	1:2500

Based on detailed
hazard map
>3m depth
Once-in-200 yr flood





Further actions

Measures for vulnerable group: social welfare facilities for elderly or handicapped

Underground facilities

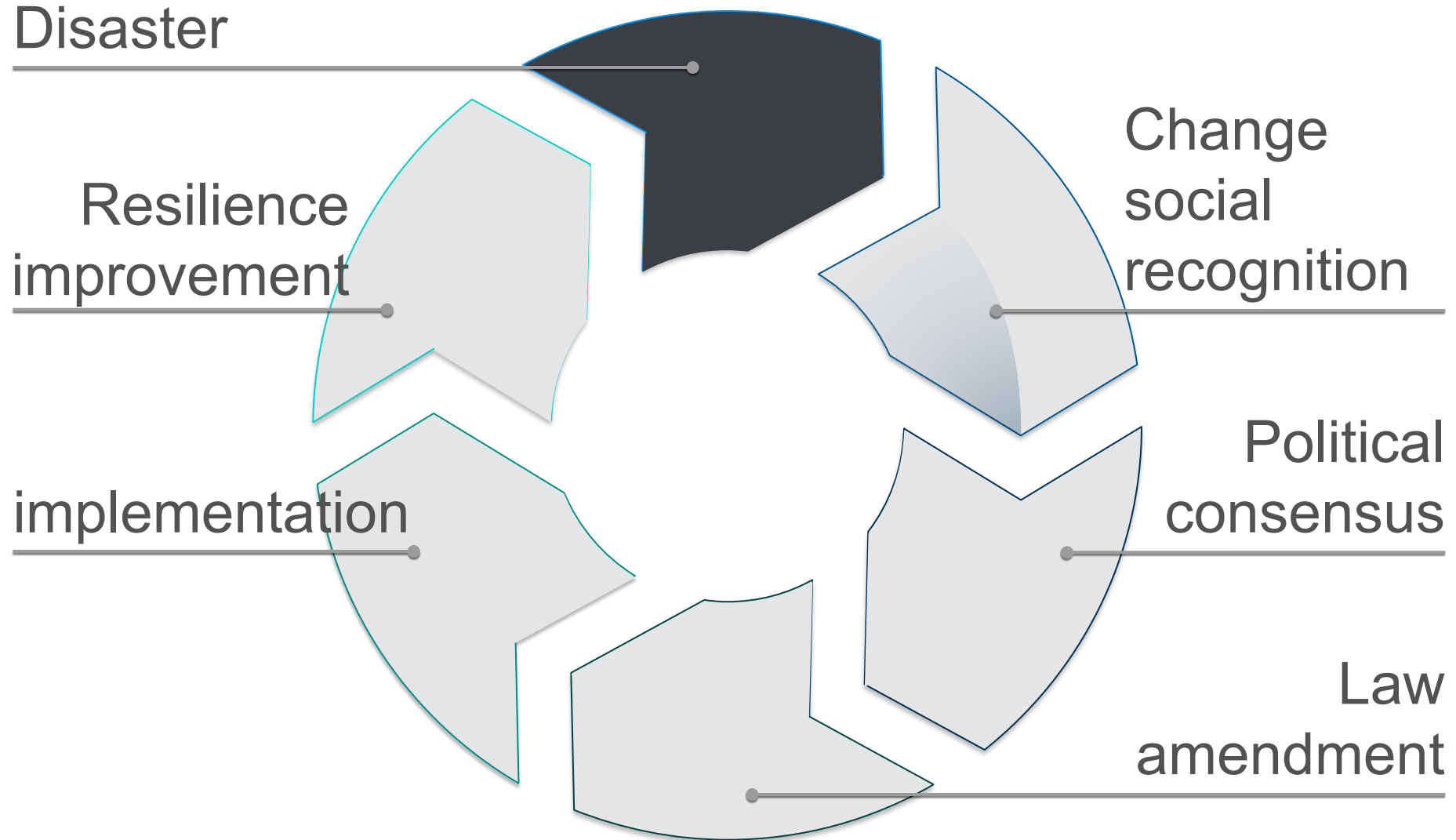
Informing risks when purchasing housings

Discussion and conclusion

1. Factors for policy change

- Impact by large-scale disaster
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- Social recognition on “Information can save lives”: conquer “taboo”
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- Political consensus

2. Policy transformation



THANK YOU, 감사합니다
MIKIO ISHIWATARI, PHD, ISHIWATARI@MEIJI.AC.JP

